UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
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TELEPHONE ENGINEERING INFORMATION

These information letters are intended to provide a means for answering questions that arise in the field and to inform the field of new developments. They are not intended to be instructions nor to replace in any respect the approved channels for establishing requirements and procedures.

The following REA TE & CM Sections and Addenda have been issued since the May Newsletter (No. 33) was written.

Add. 1, TE & CM-205, Preparation of an Area Coverage Design	April 1964
Add. 2, TE & CM-325, Application Guide for the Preparation of Detail Dial Central Office Equipment Requirements	April 1964
Rev. TE & CM-446, Design of Two-wire D66 Loaded Negative Resistance Repeatered Trunk Plant	April 1964
Rev. TE & CM-822, Electrical Protection of Carrier Equipment	March 1964
New, TE & CM-933, Application Guide for Point-to-Point Radio (Microwave) Specifications REA Form 397d	April 1964
Rev. 52, TE & CM-102, Numerical Index	May 1964
Add. 2, TE & CM-515, Telephone Traffic Measurements	May 1964
New, TE & CM-350, Basic Types of Switching Systems	September 1964
New, TE & CM-329, Expansion of Existing Dial Central Office Switchboards	September 1964

Leich Electric Switchboards. The Automatic Electric Company has renewed its interest in the competitive switchboard business and is prepared to bid on TPS switchboards using Leich Electric equipment. Automatic Electric Company is presently not in a position to make deliveries of step by step equipment (A. E. Strowger type) except with excessive delivery time.

PED Carrier Equipment. Carrier equipment manufactured in Texas by the PED Co. which will be marketed by the Superior Cable Company has been laboratory tested. The results were satisfactory, conforming with REA specifications for single party carrier. Prices without repeaters are about $400 per channel. Costs will rise depending on the number of repeaters used. It will be a boon for reinforcing existing plant where upgrading requires more facilities. It is expected to be used for subscribers as close as three miles from the central office on existing plant.

A preliminary field trial is scheduled for November in Hickory, North Carolina. In the first quarter of 1965 a one hundred channel installation will be made in REA borrower's plant for further trial.

Western Electric N2 Carrier. REA has made complete tests of the WE N2 carrier at Bayon La Batre, Alabama, preliminary to recommending it to Committee A for inclusion in the List of Acceptable Materials. The results were satisfactory.

Lynch B410 Trunk Carrier and Kellogg K24 Subscriber Carrier. These carrier systems are being installed, the B410 is at Port Byron, Illinois, and the K24 at Mayfield, Kentucky.

IMTS Service. The Improved Mobile Telephone System (IMTS) offers a grade of service near that realized on a residence telephone. The new concept is in keeping with the REA upgrading of service. It is dial service on which more information will be provided later. It is being supplied by Motorola and the General Electric Company. The Secode Corporation has entered into an agreement with General Electric to supply the central office control terminals. Furthermore, Secode will provide IMTS terminals to other major radio manufacturers and users.

REA Survey of Subscriber Loop Plant. As was mentioned in the May newsletter No. 33, the System Design Group is involved in a sampling survey of 1000 subscriber circuits from 439 REA borrowers' systems. The overall response has been excellent, as REA has received and checked data for 984 loops which is better than 98%. All the material has been coded and punched on cards in numerical form for computer processing. Preliminary results were mentioned at the June conference. It is expected that important information will be available not previously known about the REA borrowers' rural systems concerning the plant itself and the distribution of subscribers. For example, if all exchange subscriber loops were averaged into one composit loop, the distance would be about 3.4 miles and the fill would be 4.0. More than one-half the subscribers are within two airline miles of the C.O. Separate reports are planned for (1) physical characheristics, (2) economics concerning plant improvements and upgrading, and finally, (3) transmission characteristics. As the Bell System made a similar study two years ago, some of the data can be compared with their results. The first report concerning physical characteristics has been drafted and is being prepared for distribution to REA personnel and to borrowers some time in November.

Plastic Duct System. Studies are planned for making use of plastic duct materials, using precast manholes which should reduce the present costs for a duct system.

Simultaneous Plow in of a Cable and a Plastic Duct. The Outside Plant Branch is investigating a buried plant system comprising one cable and one two inch inside diameter plastic duct in one operation. The plastic duct would provide for pulling in a relief cable at a later date when the cable becomes congested.

Gas Tube Protectors. 16B Gas Tube Protectors have been used on the open wire carrier system in the plant of the Blackfoot Telephone Cooperative Incorporated (Mont. 517) since November 1963, with satisfactory results. A further trial of 16B protectors is now underway in the carrier system of the Kingdom Telephone Company (Missouri 554).

Automatic Electric Company AT-6 Negative Resistance Repeater. This repeater, Issue No. 6, was evaluated in August and found to be unsatisfactory as to frequency response and echo return loss. Therefore, it is not recommended for use by REA borrowers at this time.

Stromberg - Carlson 671 Hybrid Repeater. This repeater has been evaluated and with the exception of the echo return loss (which the manufacturer is making modifications to improve) meets the requirements for DDD transmission. The first units will be placed in REA borrower's systems on a trial basis.

Stromberg - Carlson E-6 Type Repeater. This company is now making this negative resistance repeater under license from the Western Electric Company. A laboratory evaluation of this, its transmission performance, and other is found to meet all DDD transmission requirements. It will be placed on a field trial basis in telephone systems of REA borrowers. More information will be forthcoming immediately on completion of the REA laboratory tests.

High Voltage Power Contact Tests. So-called "burn-down" tests between high voltage power circuits and telephone aerial plant have been made at the Bureau of Standards. The telephone facilities tested included various types of wire, cable, and station protectors. The data are being analyzed and will be used as the basis of future revisions of protection practices.

Tests of Telephone Sets. A series of tests is being made at Coles Laboratory Monmouth, New Jersey, by the REA Station Equipment and Protection engineers on six makes of telephone sets to determine the extent to which they comply with the REA Telephone Set Specification PE-41. The results will be used in the further revision of PE-41.

Fuseless Station Protectors. Two new types of fuseless station protectors have been undergoing tests to determine compliance with REA Specification PE-42, Telephone Station Protector. A field trial has been instituted on one of these in the telephone system of the Yadkin Valley Telephone Membership Corporation (North Carolina 509).

Channel Splicing Machine Company, Incorporated Splice Case. It has come to the attention of REA that some borrowers have been informed that the Channel Splice Case had been accepted for inclusion in the List of Material Acceptable for use in Telephone Systems of REA Borrowers. This is not true. Certain deficiencies have been found in REA's evaluation of this type splice case and the Channel Company has been asked for certain information and design changes aimed at overcoming the deficiencies found in the REA evaluation.

Alumoweld Strand. The method used in splicing individual strands in seven strand alumoweld messenger is not acceptable to REA. The manufacturer has been notified as of July 13, 1964, not to ship to REA borrowers any Alumoweld Strand using spliced wires in the strand.

Figure 8 Cable and Wire Trouble. REA is actively investigating the problems involved in the construction of Figure 8 cable and wire having solid support wires. The problems relate to methods of attachment and spiraling which have permitted migration of spirals and damage to conductors.